~~Method of Treating Dopaminergic and GABA-nergic Disorders~~ Vertebrate Embryonic Patterning-Inducing Proteins, Compositions and Uses Related Thereto

In the claims:

For the convenience of the Examiner, all claims being examined, whether or not amended, are presented below.

Please cancel claims 63, 65, and 67 without prejudice.

35. (Thrice Amended) An isolated nucleic acid encoding a polypeptide comprising a *hedgehog* polypeptide which is at least 98 percent identical to either SEQ ID No: 17 or an N-terminal fragment of SEQ ID No: 17 having a molecular weight of about 19 kD, which *hedgehog* polypeptide binds to a *patched* protein or promotes proliferation of testicular germ line cells.

39. (Reiterated) An expression vector, capable of replicating in at least one of a prokaryotic cell and eukaryotic cell, comprising the nucleic acid of claim 35.

40. (Reiterated) A host cell transfected with the expression vector of claim 39 and expressing said recombinant polypeptide.

42. (Reiterated) A recombinant transfection system, comprising

(i) a gene construct including the nucleic acid of claim 35, operably linked to a transcriptional regulatory sequence for causing expression of the hedgehog polypeptide in eukaryotic cells, and

(ii) a gene delivery composition for delivering said gene construct to a cell and causing the cell to be transfected with said gene construct.

43. (Twice Amended) The recombinant transfection system of claim 42, wherein the gene delivery composition is selected from a group consisting of a recombinant viral particle, a liposome, and a poly-cationic nucleic acid binding agent.

49. (Twice Amended) An isolated nucleic acid comprising a nucleotide sequence which encodes a polypeptide of SEQ ID No. 17 or an N-terminal fragment thereof having a molecular weight of about 19 kD, which polypeptide binds to a *patched* protein.

52. (Reiterated) A nucleic acid according to claim 49, further comprising a transcriptional regulatory sequence operably linked to said nucleotide sequence.

53. (Reiterated) An expression vector, configured for replication in at least one of a prokaryotic cell and eukaryotic cell, comprising the nucleic acid of claim 49.

54. (Reiterated) A host cell transfected with the expression vector of claim 53.

62. (Reiterated) The nucleic acid of claim 49, comprising the nucleotide sequence of SEQ ID No. 8.

64. (Amended) An isolated nucleic acid ~~comprising~~ the nucleotide sequence of SEQ ID No: 8 or its complementary nucleotide sequence.

66. (Amended) An expression vector comprising the nucleic acid of claim 64.

68. (Reiterated) The nucleic acid of claim 64, which encodes an amino acid sequence of SEQ ID NO: 17.

69. (Amended) A host cell transfected with the nucleic acid of claim 64 and expressing said recombinant polypeptide.

70. (Amended) A host cell transfected with the expression vector of claim 66 and expressing said recombinant polypeptide.

75. (Reiterated) The nucleic acid of claim 49, which nucleic acid encodes a polypeptide including amino acids 23-198 of SEQ ID No: 17.

76. (Reiterated) The nucleic acid of claim 49, which nucleic acid encodes a polypeptide including SEQ ID No: 17.

77. (Amended) An isolated nucleic acid encoding a polypeptide consisting essentially of a *hedgehog* polypeptide which is at least 98 percent identical to either SEQ ID No: 17 or an N-terminal fragment thereof having a molecular weight of about 19 kD, which *hedgehog* polypeptide binds to a *patched* protein or promotes proliferation of testicular germ line cells.

78. (Amended) An isolated nucleic acid encoding a polypeptide consisting of a *hedgehog* polypeptide which is at least 98 percent identical to either SEQ ID No: 17 or an N-terminal fragment thereof having a molecular weight of about 19 kD, which *hedgehog* polypeptide binds to a *patched* protein or promotes proliferation of testicular germ line cells.

79. (Amended) An isolated nucleic acid encoding a polypeptide comprising a *hedgehog* amino acid sequence which is at least 98 percent identical to SEQ ID No: 17, which *hedgehog* amino acid sequence binds to a *patched* protein or promotes proliferation of testicular germ line cells.

The claims presented above incorporate changes as indicated by the marked-up versions below.

35. (Thrice Amended) An isolated nucleic acid encoding a polypeptide comprising a *hedgehog* [amino acid sequence]polypeptide which is at least 98 percent identical to either SEQ ID No: 17 or an N-terminal fragment of SEQ ID No: 17 having a molecular weight of about 19 kD, which *hedgehog* [amino acid sequence]polypeptide binds to a *patched* protein or [regulates]promotes proliferation of testicular germ line cells.

49. (Twice Amended) An isolated nucleic acid comprising a nucleotide sequence which encodes [an amino acid sequence]a polypeptide of SEQ ID No. 17 or an N-terminal fragment

thereof having a molecular weight of about 19 kD, which [amino acid sequence]polypeptide binds to a *patched* protein.

63. (CANCEL) An isolated nucleic acid which encodes a naturally occurring Desert hedgehog protein of human origin or an N-terminal fragment thereof, having a molecular weight of about 19 kD.

64. (Amended) [The nucleic acid of claim 63, which contains either] An isolated nucleic acid comprising the nucleotide sequence of SEQ ID No: 8 or its complementary nucleotide sequence.

65. (CANCEL) The nucleic acid of claim 63, which is inserted into an expression vector.

66. (Amended) [The nucleic acid of claim 64, which is inserted into an]An expression vector comprising the nucleic acid of claim 64.

67. (CANCEL) The nucleic acid of claim 63, which encodes an amino acid sequence of SEQ ID NO: 17.

69. (Amended) [The nucleic acid] A host cell transfected with the nucleic acid of claim 64 and expressing said recombinant polypeptide [63 or 64, which is introduced into an appropriate host].

70. (Amended) [The nucleic acid] A host cell transfected with the expression vector of claim 66 and expressing said recombinant polypeptide [65 or 66, which is introduced into an appropriate host].

77. (Amended) An isolated nucleic acid encoding a polypeptide consisting essentially of a *hedgehog* [amino acid sequence]polypeptide which is at least 98 percent identical to either SEQ ID No: 17 or an N-terminal fragment thereof having a molecular weight of about 19 kD, which *hedgehog* [amino acid sequence]polypeptide binds to a *patched* protein or [regulates]promotes proliferation of testicular germ line cells.